

Preliminary Amendment dated February 9, 2004
Serial No. 09/697,198

IN THE CLAIMS

Claim 1. (Previously Presented) Wavelength stabilizing apparatus for use in stabilizing the wavelength of an optically pumped tunable laser to a predetermined target wavelength, wherein the optically pumped tunable laser provides an output laser signal having an instantaneous wavelength and the optically pumped tunable laser is optically pumped by a pump laser signal provided by a pump laser, the pump laser signal having an intensity, the pump laser and the optically pumped tunable laser each having a gain medium and each gain medium having an electrooptical performance characteristic, the wavelength stabilizing apparatus comprising:

a wavelength measuring module for detecting a difference between the instantaneous wavelength of the output laser signal and the predetermined target wavelength, and for generating an output error signal which is representative of the difference; and

a control unit for receiving said output error signal from said wavelength measuring module and for providing a control signal to said pump laser suitable for modifying the electrooptical performance characteristic of said the medium of the pump laser in accordance with said control signal, wherein the modified electrooptical performance characteristic of the gain medium modulates the intensity of said pump laser signal, wherein the modulated pump laser signal modifies the electrooptical performance characteristic of the gain medium of the optically pumped tunable laser, wherein the wavelength of the output laser signal of the optically pumped tunable laser is adjusted to substantially equal the predetermined target wavelength.

Claim 2. (Previously Presented) Wavelength stabilizing apparatus according to claim 1 wherein the pump laser is an electrically pumped laser having an injection current and wherein the control unit is adapted to adjust the injection current applied to the gain medium, wherein adjustments to the injection current modify the electrooptical performance characteristic of the gain medium of the pump laser and thereby modify the intensity of the pump laser signal and thereby modify the electrooptical performance of the gain medium of the optically pumped tunable laser.

Claims 3-4. (Cancelled)

Claim 5. (Previously Presented) A laser system comprising:

Preliminary Amendment dated February 9, 2004
Serial No. 09/697,198

an optically pumped tunable laser;

a pump laser providing a pump laser signal having an intensity, said pump laser having a gain medium, the gain medium having an electrooptical characteristic, said pump laser signal being optically coupled to the optically pumped tunable laser, wherein the optically pumped tunable laser provides a laser output signal having a wavelength;

wavelength stabilizing apparatus for use in stabilizing the wavelength of the laser output signal to a target wavelength, said wavelength stabilizing apparatus comprising:

a wavelength measuring module for detecting a difference between an instantaneous wavelength of the laser output signal and the target wavelength, and for generating an error signal which is representative of the difference; and

a control unit for receiving said error signal from said wavelength measuring module and operative to provide a control signal to the pump laser suitable for modifying said electrooptical characteristic of the gain medium of the pump laser in accordance with said control signal, wherein the modified electrooptical performance characteristic of the gain medium of the pump laser modulates the intensity of the pump laser signal, wherein said modulated pump laser signal modifies the electrooptical performance characteristic of the gain medium of the optically pumped tunable laser, so as to adjust the tunable laser to its target wavelength.

Claim 6. (Currently Amended) A method for stabilizing the wavelength of an optically pumped tunable laser to a target wavelength, said method comprising:

determining a target wavelength of a laser signal emitted from the optically pumped tunable laser from a range of wavelengths corresponding to a tuning voltage applied across a top electrode and a bottom electrode of the tunable laser;

detecting a difference between an instantaneous wavelength of the laser and the target wavelength, and generating an output signal which is representative of the difference; and

modifying an electrooptical performance characteristic of a gain medium of a pump laser providing a pump laser signal to the optically pumped tunable laser in accordance with said output signal so as to adjust the laser signal from the tunable laser to the predetermined target wavelength.

Preliminary Amendment dated February 9, 2004
Serial No. 09/697,198

Claim 7. (New) A method of adjusting an output of an optically pumped tunable laser, the method comprising the steps of:

providing an optical pump signal to the optically pumped tunable laser;
measuring an output of the optically pumped tunable laser to form a feedback signal;
adjusting the optical pump signal in accordance with the feedback signal and providing the adjusted optical pump signal to the optically pumped tunable laser.

Claim 8. (New) The method of claim 7, wherein the feedback signal is based on a difference between an instantaneous wavelength of lasing of the optically pumped tunable laser and a target wavelength of the tunable laser.

Claim 9. (New) The method of claim 8, wherein the target wavelength of the tunable laser is based on an intended tuned output wavelength of the tunable laser.

Claim 10. (New) The method of claim 7, wherein the step of measuring the output of the optically pumped tunable laser comprises directing at least a portion of a lasing output of the optically pumped tunable laser to a wavelength measuring module, and wherein the step of measuring the output is performed by the wavelength measuring module.

Claim 11. (New) The method of claim 7, wherein the optical pump signal is generated by an optical pump laser, and wherein the step of adjusting the optical pump signal comprises adjusting an output of the optical pump laser.

Claim 12. (New) The method of claim 11, wherein the optical pump laser is an electrically pumped optical pump laser, and wherein the step of adjusting the optical pump signal comprises adjusting an electrical pump signal to the electrically pumped optical pump laser.

Claim 13. (New) An output stabilized tunable laser, comprising:

an optically pumped tunable lasing cavity having lasing output and an input configured to receive an optical pump signal;

Preliminary Amendment dated February 9, 2004
Serial No. 09/697,198

a control unit configured to adjust the optical pump signal based on an output waveform obtained from the lasing output.

Claim 14. (New) The output stabilized tunable laser of claim 13, further comprising:

a pump laser configured to generate the optical pump signal and connected to the control unit; and

a wavelength measuring module configured to measure an optical characteristic of an output from the lasing output.

Claim 15. (New) The output stabilized tunable laser of claim 14, wherein the wavelength measuring module is configured to measure an instantaneous lasing wavelength of the output waveform.

Claim 16. (New) The output stabilized tunable laser of claim 15, wherein the control module is configured to adjust the pump laser to adjust the optical pump signal.

Claim 17. (New) The output stabilized tunable laser of claim 15, wherein the wavelength measuring module is configured to compare the instantaneous lasing wavelength of the output waveform with a target wavelength of the tunable laser.

Claim 18. (New) The output stabilized tunable laser of claim 17, wherein the target wavelength of the tunable laser is based on an intended tuned output wavelength of the tunable laser.

Claim 19. (New) The output stabilized tunable laser of claim 14, further comprising a beam splitter configured to direct a portion of the beam to the wavelength measuring module.